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CASTANEA PUMILA, Michx. Duval county, C 6411.
 CERATIOLEA ERICOIDES, Michx. Manatee, S 67; Hillsboro county, B 2744.
 CERATOPHYLLUM DEMERSUM, L. Duval county, C 5173.
 APTERA SETACEA, Nutt. Pasco county, B 2621.
Microstylis floridana, Chapm. Istachatta, C (1897).
 BLETTIA VERECUNDA, Sw. No Name Key, C, April 22 (1896).
 CALOPOGON PARVIFLORUS, Lindl. Pasco county, B 2526.
Calopogon multiflorus, Lindl. Eau Gallie, C, March 21 (1896).
Cyrtopodium ecristatum, Fernald. Eau Gallie, C, July (1896).
 POGONIA OPHIOGLOSSOIDES, Nutt. Marion county, B 2033.
 POGONIA DIVARICATA, R. Br. Duval county, C 4729.
 HABENARIA REPENS, Nutt. Eau Gallie, C, July (1896).
 ZEPHYRANTHES TREATIÆ, Wats. Duval county, C 6347.
 PANCRATIUM ROTATUM, Ker. Duval county, C 4732.
 HYPOXIS JUNCEA, Smith. Pasco county, B 2538.
 TILLANDSIA RECURVATA, Pursh. Duval county, C 5054.

NATIVE PLANTS OF KANSAS ADAPTED TO CULTIVATION.

BY GRACE R. MEEKER, OTTAWA, KAN.

Read before the Academy December 29, 1900.

Kansas is centrally located, dividing north from south and east from west. The elevation of the surface varies, rising rapidly westward. The climate also varies, from drought a part of the year to drought all of the year. All these factors combine in the production of a varied flora. You will almost need a new botany for the western plains; and many plants of the southern or northern parts of the state are not known in the central portion. In all its different parts Kansas has many attractive plants. Some have already been introduced into other localities than their "native heath"; but much remains to be done before their decorative possibilities shall have been made known to us. It is not intended here to give a list of the wild flowers which are to be improved by cultivation, but those not likely to become pests, and whose pretty blossoms or fine foliage will repay your trouble. In western Kansas we have some desirable Compositæ. *Aster grandiflorus*, the largest-flowered aster of the plains, with brilliant blue or purple flowers, has been grown successfully from seed. Two gaillardias—*Gaillardia pulchella* and *G. lanceolata*—are highly recommended. Both gaillardias have flowers of good size, with bright brown centers, and rays—in *G. pulchella* purplish, in *G. lanceolata* yellow. The townsendias, of which we have two species, and *Zinnia grandiflora*, from the southwest, are also desirable. Beside these, we may add *Malvastrum coccineum*, the red mallow, which has been recommended to you by Miss Reed; *Mentzelia nuda*; and the *Yucca filamentosa*, whose beauty is not spoiled by its common name, soapweed, and which is often seen in Franklin county lawns. The mentzelia has large, creamy flowers, with a peculiar fringe of sterile filaments surrounding the fertile stamens. The plant itself is rough and somewhat coarse looking; but when the great creamy buds expand, as they do in the late afternoon, the plant is glorified.

From the south we get a handsome blossom, the *Dodecatheon meadia*, variously called wild cyclamen (which it resembles in shape of flower), shooting star, and American cowslip. This plant bears out the description of the botany—"very handsome in cultivation."

Of Franklin county plants with which I am most familiar, I have made a somewhat extended list to choose from.

Uvularia perfoliata (bellwort). A slender-stemmed plant, with nodding yellow flowers.

Polemonium reptans (Greek valerian). This plant has pretty pinnate leaves. Flowers light blue, bell shaped.

Trillium erectum. Plant a foot high. Flowers white, sometimes greenish, pink, or purple. This is, I believe, the only trillium found in Kansas. All members of the family are beautiful and are successfully cultivated in the East. For a common name the prettiest is the "wake robin."

Geranium maculatum (wild cranesbill). This plant has palmate leaves and pale purple flowers. It seems to take very kindly to Kansas soil.

LATE SPRING AND EARLY SUMMER FLOWERS.

Mertensia virginica (lungwort, bluebell, Virginia cowslip). A very handsome plant, which grows two feet high and has rich, blue-purple flowers. This plant grows in Kansas, in Franklin or Miami counties, where it has been introduced.

Cypripedium pubescens (yellow lady-slipper).

Cypripedium spectabile (showy lady-slipper). Flowers pink-purple. These two plants are terrestrial orchids, which I think would grow here, since we have the *Cypripedium parviflorum*, which florists consider one of the best.

Asarum canadense (wild ginger). A plant with very beautiful leaves. Flowers stemless and interesting.

Of early spring flowers, you will want the dog-tooth violets, *Erythronium mesochoreum* of the prairies and hillsides, and *Erythronium albidum* of the woods; the Dutchman's breeches, *Dicentra cucullaria*; the blood root, *Sanguinaria canadensis*; spring beauty, *Claytonia virginica* (this, I have been told, makes an elegant basket plant); all the violets, of which we have five species, including the wild pansy; the *Anemone caroliniana* and its near relation the *Isopyrum biternatum*. Golden *Corydalis* and chervil, *Cherophyllum petatum*, seem worthy of a place here.

Sweet-william, *Phlox divaricata*, and prairie phlox, *Phlox pilosa*, the former with its lavender blossoms, which you will find in bloom in the woods by May 1, and the latter the pink phlox of the meadows, a little later in time of blooming, will add both color and fragrance to your garden. You will make room for the larkspur, *Delphinium tricornis*, blue, and *Delphinium carolinianum*, white, which I put together here, although the white bee larkspur belongs with summer bloomers.

The wild columbine, *Aquilegia canadensis*, with its bells of red and yellow, you will give a shady corner. The wild hyacinth, *Camassia frazeri*, and the common white mallow, *Callirhoe alceaoides*, will end the list of early spring flowers.

Of late spring and early summer flowers, we have *Penstemon cobea*, the wild foxglove, the most showy of its kind, which is sometimes given in seed catalogues; the evening primroses, yellow and white, *Oenothera missouriensis*, and *Oenothera speciosa*; the wild petunias, two species, the common *Ruellia ciliosa* of the prairies, and the more rare and more handsome *Ruellia strepens* of open woodlands. This last plant has the peculiarity of forming seed in closed blossoms, and is therefore but a shy bloomer; still, the blossoms are so handsome and the plant itself so "good looking" I venture to give it a place upon the list.

The spiderwort, *Tradescantia virginica*, no patriot will be without, for it

has red, white and blue forms. These, with the twin dayflower, *Commelyna*, are very desirable, responding readily to a little cultivation.

The false indigo, *Baptisia*, of which we have three species, cream color, white, and blue, are coarse and unworthy of cultivation, though often offered in catalogues.

The small-flowered lady-slipper, or moccasin flower, *Cypripedium parviflorum*, like all of its kind, hides away in unexpected places; and you may consider yourself most fortunate if you find any plants.

Asclepias tuberosa, the butterfly-weed, with orange-red flowers, and *Asclepias incarnata*, sometimes called the swamp milkweed, with red-purple flowers, will add a bright bit of color.

The golden ragwort, *Senecio aureus*, is a fine plant for decoration, keeping well when cut, and making a good blossom for corsage bouquets for the wearer of yellow.

St. John's-wort, *Hypericum*, of which we have two species, is another attractive flower; but be careful in cultivating this, lest you encourage a pest. The yellow coneflower, *Lepachys pinnata*, is a flower that I think is quite safe, and makes a fine growth in moderately rich soil.

SUMMER AND FALL FLOWERS.

Aconitum uncinatum (monkshood). Plant grows about two feet high; has dark-green palmate leaves and irregular, pale-blue flowers, which remind one strongly of the monk's hood, from which it takes its name.

Lonicera (honeysuckle) shrubs. Several species.

Aster novæ-angliæ (New England aster). A stout, shrub-like herb, with rather dark-blue flowers. Grows in rich, damp soil.

Aster sericeus. Leaves silky; flowers dark purple.

The wild red lily, *Lilium superbum*, is described by its name, a superb lily.

The sensitive brier or sensitive rose, *Schrankia uncinata*, with its near relation, the partridge pea, *Cassia chamæcrista*, will delight the children with their shrinking leaves and the peculiar way in which they go to sleep at night. It is probably the *Schrankia* to which Longfellow referred when he wrote, in Evangeline:

"As at the tramp of a horse's hoof on the turf of the prairies,
Far in advance are closed the leaves of the shrinking mimosa,
So, at the hoof-beats of fate, with sad forebodings of evil,
Shrinks and closes the heart ere the stroke of doom has attained it."

The horsemint, *Monarda fistulosa*, grows well in rich soil.

The jewel weed, or pale touch-me-not, *Impatiens pallida*, is very desirable; but needs shade and moisture, plenty of both.

In this division you will want the meadow rue, of which we have two species, *Thalictrum purpurascens* and *Thalictrum polygamum*. The last named has been considered worthy of illustration in "How to Grow Flowers." It grows tall, makes fine clumps of foliage, crowned with the mist-like, whitish clusters of delicate flowers. Needs a partially shady situation. The commoner meadow rue will grow almost anywhere in the garden, with the other woodland plants. The foliage is nice for cutting and adds very much to a cluster of roses.

Of the late summer and autumn flowers, we have *Euphorbia corollata*, flowering spurge. All the euphorbias are interesting to a botanist; the family is large, some members being tropical and cultivated in greenhouses. The button-snake-root and gay-feather species of *Liatris* are bright red-purple-flowered plants which, with the goldenrods and asters, sneeze-wort, *Helenium autumnale*, and the eupatoriums, make a good showing for the composite family.

The wild ageratum, *Eupatorium ageratoides*, you will find growing in moist, shady places with the asters. You will recognize it from its resemblance to the blue ageratum of the gardens. It is sometimes highly recommended for a companion to the scarlet salvia. If you can succeed in growing the cardinal flower, *Lobelia cardinalis*, the ageratum will go well with it. The blue *Lobelia siphilitica* is also desirable.

The blue gentian of our meadows, *Gentiana puberula*, is the crowning glory of our autumn fields. I know of nothing more beautiful than a cluster of these wonderfully blue flowers, which hide in the long grass of the prairie, often close to the roadside, and, when the sun shines brightly, open the petals to the fullest extent, closing tightly at night and on cloudy days. The flowers are very sensitive to light, often opening at night, if placed directly under the rays of a large lamp.

These flowers are due in the first weeks of October. You will find some by the 8th of that month, and with them I close this part of my list.

FERNS.

Our commonest fern is also one of the best for cultivation, the bladder fern, *Cystopteris fragilis*. We have also the maidenhair fern, *Adiantum pedatum*; the Christmas fern, *Aspidium acrostichoides*; the walking fern, *Camptosorus rhizophyllus*, and the moonwort, *Botrychium virginianum*, which is classed with ferns, although not one strictly speaking. There are some other ferns growing in the limestone ledges—the little cloak fern and the rock brake, which will need careful treatment in imitating their natural surroundings in order to do well.

Of vines, I hesitate which to put first. The Virginia creeper, *Ampelopsis quinquefolia*, seems to lead, with the climbing rose, *Rosa setigera*, a close second. Bitter-sweet, *Celastrus scandens*; the clematis, two species, *C. virginiana* and *C. pitcheri*; the wild cucumber, *Echinocystis lobata*; and the moonseed vine, *Menispermum canadense*, will give you quite a collection of native vines which have no objectionable features. I am tempted to add the passion-flower, native to the southern part of the state and the Indian territory and southward. The vine spreads from the root, but does not form seed in this climate. I must add the wild grape and the hop.

Of shrubs, you may select from button bush, *Cephalanthus occidentalis*; *Amorpha fruticosa* (the botany gives no common name—tall lead-wort will perhaps answer); sweet sumac, *Rhus aromatica*, which has attractive red berries; the sheepberry, nanny-berry, *Viburnum prunifolium*, which is sometimes called the black haw. The glossy, pear-like leaves make this one of our finest shrubs for decoration, even when not in bloom or fruit. Some of the cornels, dogwoods, might be used; and the *Staphylea trifolia*, or bladdernut, ought not to be left out.

For the water garden, you will want the water-lily, *Nelumbo lutea*, closely related to the lotus; the snow-head, *Sagittaria variabilis*; the water plantain, *Alisma plantago*; the bladderwort, *Utricularia vulgaris*; the water crow-foot, *Ranunculus multifidus*, with its golden flowers like a buttercup; the *Jussiaea*, with its shining leaves and yellow flowers; the water-willow, *Dianthera americana*, with its two-lipped white flowers, marked with purple; the little wild lantana or fog-fruit, *Lippia lanceolata*, and some plants of the cat-tail, *Typha latifolia*.

For the rockery, the stone crop, *Sedum pulchellum*, will be good, and the *Houstonia angustifolia*. This last has flowers of pinkish white, which remind one of the bouvardias.

In preparing the soil for your wild flowers, you will need to be careful not to make it too rich; since many wild flowers will be coarsened by too much plant-food. The violets, particularly, will give you no blossoms, but a great growth of leaves. All plants from the prairies will do well in ordinary garden soil. It is not necessary to try to imitate their native soil. The plants from the wood will need shade, and watering now and then. The north side of a hedge fence trimmed somewhat high would be best; but the shady side of a stone wall or building, perhaps the house itself, will do very well. Woodland plants will do better for an admixture of leaf loam in the soil; and it seems to be a necessity for ferns.

In making the water garden, it would be well, I think, to sink the half-barrel, or whatever you use, in the ground in a shady place; then, the most of your water-plants will grow about the edge, where you can keep them sufficiently moist.

It will not be necessary to know the scientific names of flowers, nor even any name at all. We have very few poisonous plants, and those are not usually attractive; so that you may take anything that strikes your fancy. It may be best to gather seeds of late-blooming sorts, sowing the seed in early spring, not too early for warmth.

My paper will not be complete perhaps, unless I add a few "do n'ts."

It would be best to avoid cultivating any member of the family *Convolvulus*, or morning-glory. You will be tempted, if you love vines, to take the *Ipomœa pandurata*, old-man-in-the-ground, largely advertised a few years ago as the hardy day moonflower, but *do n't*. Nor must you have anything to do with the beautiful white bindweed, unless you have courage to pull up and dig out all sprouts you do not wish to grow. Nor would I advise growing any of the sun-flowers, although our common sunflower, *Helianthus annuus*, is a bright and wholesome plant; yet it has, sometimes, such a quantity of seed that it is impossible to prevent its spreading. Another member of the family, our abundant rock-weed, *Helianthus orgyalis*, is grown in Eastern gardens and considered very desirable. The long, drooping leaves are as much in demand as the flower.

Of the ox-eyed daisy and the sweet clovers I need not speak. You all know their capabilities.

ADDITIONS TO THE LIST OF KANSAS COLEOPTERA FOR THE YEARS 1899 AND 1900.

BY WARREN KNAUS, MCPHERSON.

Read before the Academy December 28, 1900.

The additions to the list of Kansas coleoptera for the past two seasons number 236 species, a much larger number than has been added in recent years. This has largely been through the work of Mr. F. F. Crevecoeur, of Onaga, Kan., who has, by careful collecting among the small forms near his home, added 150 species. Quite a number of those added the past two years were rare and unique forms, representing the northern extension of the Texan fauna.

The present additions bring the number of Kansas coleoptera up to 2500, and a careful revision of material now in Kansas collections would certainly increase this number to a considerable extent.

The bulk of the determinations in the present list were made by Mr. Charles Liebeck, of Philadelphia, Pa., in charge of the Dr. G. H. Horn collection of coleoptera; H. C. Fall, of Pasadena, Cal., and by the Department of Agriculture, Washington, D. C., to whom acknowledgments are due.